

WHAT IS CLAIMED IS:

1. An electrode composition containing a lithium fluoroborate-based salt in an electrolyte, wherein:

a poly(vinylidene fluoride) homopolymer is contained
5 at least as a binder and a lactone is contained as an electrolyte solvent,

said poly(vinylidene fluoride) homopolymer being obtained by a emulsion polymerization process.

2. The electrode composition according to claim 1,
10 wherein said poly(vinylidene fluoride) homopolymer has a molecular weight of 50,000 or higher and a degree of crystallinity of 30% or greater, and

a solvent for an electrolyte solution further contains a cyclic carbonate provided that the volume ratio
15 of said cyclic carbonate and said lactone is in the range of 3/7 to 1/9 as calculated on an ethylene carbonate-to- γ -butyrolactone basis.

3. A lithium secondary battery, which comprises an electrode composition as recited in claim 1 or 2.

20 4. The lithium secondary battery according to claim 3, wherein at least the poly(vinylidene fluoride) homopolymer, lactone and lithium fluoroborate-based salt are contained as solid electrolyte components.

5. The lithium secondary battery according to
25 claim 3 or 4, wherein a lithium-containing composite oxide comprising lithium cobalt oxide and a subordinate component element M, where M is a transition or typical metal element exclusive of Li and Co, in an amount of 0.001 to 2 at% relative to cobalt in the lithium cobalt
30 oxide is contained as a cathode active substance, and 60 to 95% by volume of γ -butyrolactone is contained as an electrolyte solvent.

6. The lithium secondary battery according to claim 5, wherein said subordinate component element is one or two or more of Ti, Nb, Sn and Mg.

7. A lithium secondary battery, wherein:

5 a cathode, an anode and an electrolyte are encased in a housing,

a lithium-containing composite oxide comprising lithium cobalt oxide and a subordinate component element M, where M is a transition or typical metal element exclusive
10 of Li and Co, in an amount of 0.001 to 2 at% relative to cobalt in the lithium cobalt oxide is contained as a cathode active substance,

60 to 95% by volume of γ -butyrolactone is contained as an electrolyte solvent, and

15 said housing has a thickness of 0.3 mm or smaller.

8. The lithium secondary battery according to claim 7, wherein said subordinate component element is one or two or more of Ti, Nb, Sn and Mg.